




**Łukasiewicz**  
Institute  
of Aviation



*WHEN EVERYTHING  
SEEMS TO BE GOING AGAINST YOU,  
REMEMBER THAT THE AIRPLANE  
TAKES OFF AGAINST THE WIND, NOT WITH IT.*

*HENRY FORD*

# TABLE OF CONTENTS

1	MISSION AND VISION
2	COMPANY STRUCTURE
4	HISTORY
5	ŁUKASIEWICZ RESEARCH NETWORK
6	INSTITUTE TODAY
8	RESEARCH FOR INDUSTRY
9	STRATEGIC RESEARCH AREAS
10	AVIATION TECHNOLOGIES
11	SPACE TECHNOLOGIES
12	UNMANNED TECHNOLOGIES
13	MATERIAL TECHNOLOGIES
14	COMPOSITE TECHNOLOGIES
15	R&D FOR INDUSTRY
16	TRUSTED BY MAJOR COMPANIES
17	COOPERATION WITH INDUSTRY
18	CERTIFICATES AND QUALITY SYSTEMS
20	OUR PROJECTS
22	AVIATION TECHNOLOGIES
23	SPACE TECHNOLOGIES
24	DOMESTIC COOPERATION
26	INTERNATIONAL COOPERATION
28	ENGINE RESEARCH
29	UTM TESTS IN NEVADA
30	AWARDS AND DISTINCTIONS
31	SCIENTIFIC CONFERENCES
32	PUBLISHING HOUSES
33	OUR CSR
34	NIGHT AT THE INSITUTE OF AVIATION

**CONTACT**

*Dear Sirs,*

the history, passion, commitment, knowledge and experience of our employees cannot be closed in few words.

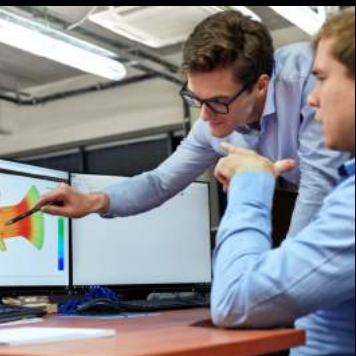
It is the history of over 90 years of research, creation of new visions and lively discussions from which the spirit of the entire Polish aviation emerges.

I invite you to get familiar with the Łukasiewicz Research Network - Institute of Aviation, as the workplace for outstanding researchers, scientists and engineers, as well as the opportunities offered by our research centers.

I believe that through cooperation with the Łukasiewicz Research Network - Institute of Aviation, your institutions will increase their potential on the market and will succeed.

**Paweł Stężycki, Ph.D.Eng.**

Director of the Łukasiewicz Research Network  
- Institute of Aviation



# MISSION

The Łukasiewicz Research Network – Institute of Aviation provides the highest quality R&D services to the local and global industrial partners in order to obtain direct benefits for the national economy.



# VISION

By 2024, the Łukasiewicz Research Network – Institute of Aviation will become one of the leading research units in Europe in the areas of:  
design and testing of aircraft structures,  
rocket engine technologies,  
and technologies of autonomy and safety of unmanned aircraft systems.



# COMPANY STRUCTURE



**PAWEŁ  
STĘŻYCKI**  
PH.D. ENG.

Director General



**SYLWESTER  
WYKA**  
PH.D. ENG.

Deputy Director for Research



**IZABELA  
IWANIAK-RYBAK**  
M.SC. ENG.

Deputy Director for Operations



**KATARZYNA  
ROSTKOWSKA**  
M.SC.

Deputy Director for Finance



**ROMAN  
DOMAŃSKI**  
PROFESSOR

Chairman of the  
Łukasiewicz - Institute of Aviation  
Council

**ANDRZEJ LESKI**  
PH.D. D.SC.

Director of  
Research Coordination Department



**JERZY ŻÓŁTAK**  
PH.D. D.SC.

Director of  
Aviation Technologies Center



**LESZEK LOROCH**  
PH.D. ENG.

Director of  
Space Technologies Center



**MIKOŁAJ JARKOWSKI**  
PH.D. ENG.

Director of  
Unmanned Technologies Center



**ARTUR RUDNIK**  
M.SC. ENG., MBA

Director of  
Engineering Design Center



**PAWEŁ SZUCHNIK**  
M.SC. ENG., MBA

Director of  
Materials and Structures Research Center



**ALEKSANDER DĄBROWSKI**  
M.SC. ENG.

Director of  
Engineering Services Center



**KONRAD KOZACZUK**  
M.SC. ENG.

Director of  
Composite Technologies Center



# HISTORY



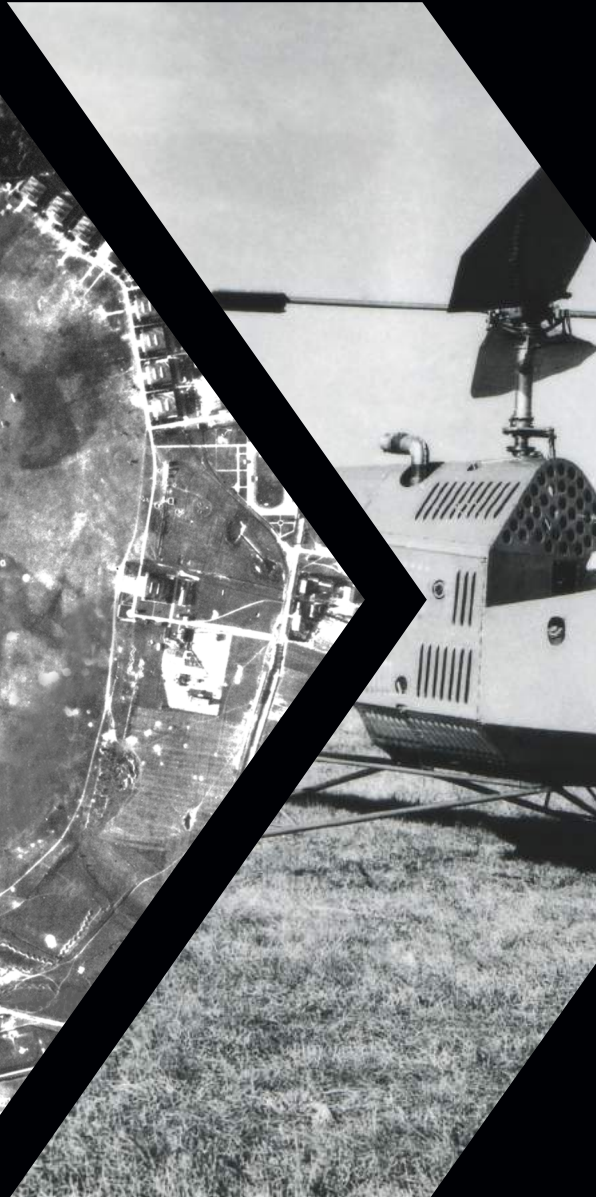
**1926-1939**

**CERTIFICATION  
OF POLISH  
AIRCRAFT**



**1939-1945**

**CONSPIRACY**



**1945-1956**

**CERTIFICATION  
OF MILITARY AIRCRAFT  
AND HELICOPTERS**





**1956-1967**

**MISSILE  
PROGRAM**



**1967-1993**

**TRAINER  
AIRCRAFT  
PROGRAM**



**1993-2021**

**CONDUCTING  
RESEARCH  
AND DEVELOPMENT  
FOR THE INDUSTRY**

# ŁUKASIEWICZ RESEARCH NETWORK

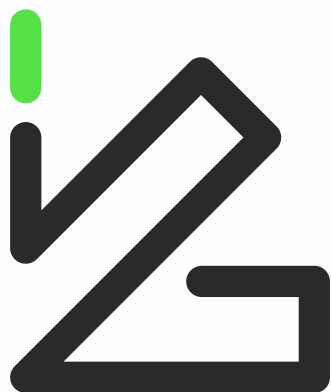


## 32 INSTITUTES

provide attractive, complete and competitive business solutions in the areas of: intelligent and clean mobility, sustainable economy and energy, digital transformation and health

## 1<sup>ST</sup> APRIL 2019

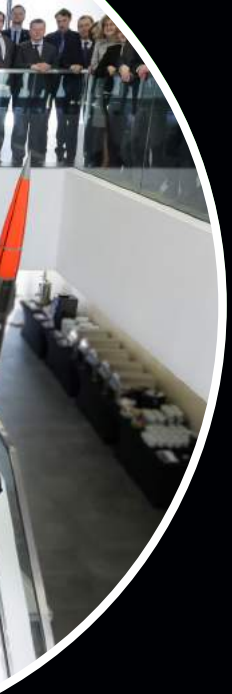
we became a part of the Łukasiewicz Research Network, a governmental project associating Polish research institutes



Łukasiewicz

## 3<sup>RD</sup> LARGEST NETWORK IN EUROPE

employs a total of 7 000 employees in 12 cities located throughout Poland



# INSTITUTE TODAY

## 95 YEARS OF EXPERIENCE

Our history consists of the passion, commitment and experience of our employees. We are an important part of the Polish aviation history

## 7 RESEARCH CENTERS

Institute consists of seven centers of excellence that meet actual needs and cover key areas of activity

## 27 LABORATORIES

In the Institute we have specialized laboratories, including 9 certified

## 1300 EMPLOYERS

We employ highly specialized engineers and scientists from the best domestic and foreign universities

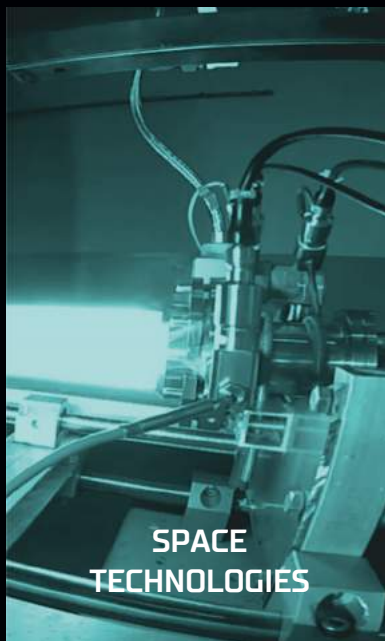


# RESEARCH FOR INDUSTRY

AVIATION  
TECHNOLOGIES



SPACE  
TECHNOLOGIES



UNMANNED  
TECHNOLOGIES



ENERGY  
TECHNOLOGIES



OIL AND GAS  
TECHNOLOGIES



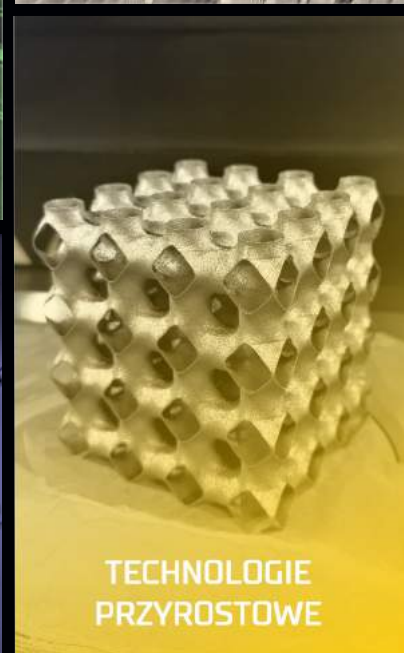
REMOTE SENSING  
TECHNOLOGIES



MATERIAL  
TECHNOLOGIES



TECHNOLOGIE  
PRZYROSTOWE





RESEARCH  
AND DEVELOPMENT  
FOR INDUSTRY

AVIATION  
TECHNOLOGIES

UNMANNED  
TECHNOLOGIES

SPACE  
TECHNOLOGIES

# STRATEGIC RESEARCH AREAS



# AVIATION TECHNOLOGIES

We conduct research and development activities related to innovative technologies in the field of aviation, including design and analysis as well as laboratory tests. Our research infrastructure is one of world's most advanced in the field of applied aerodynamics. We are a leading design and research center of aviation structures.

EXPERIMENTAL  
AND NUMERICAL  
AERODYNAMIC RESEARCH

METAL AND COMPOSITE  
AVIATION STRUCTURES  
DESIGN

AVIONIC EQUIPMENT  
DESIGN AND TESTING

AIRCRAFT ENGINE  
COMPONENTS DESIGN

RESEARCH OF ADVANCED  
PROPULSION (BLI, RDE)

HYBRID PROPULSION  
SYSTEMS DESIGN

AIRCRAFT CERTIFICATION  
PROCESS SUPPORT

AIR TRANSPORT SYSTEMS  
RESEARCH & DEVELOPMENT

AIRCRAFT DESIGN



# SPACE TECHNOLOGIES

We offer advanced solutions in the field of space technologies and remote sensing. Our engineering staff has extensive experience in European space programs. We provide remote sensing services for modern agriculture, forestry as well as for the purposes of environmental protection and the development of smart cities.

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**DEVELOPMENT OF SATELLITE  
AND ROCKET SYSTEMS,  
INCLUDING PROPULSION**

**SUBORBITAL FLIGHTS  
AND MICROGRAVITY RESEARCH**

**IT SOLUTIONS FOR REMOTE  
SENSING AND SPACE  
TECHNOLOGIES**

**DEVELOPMENT  
OF PROPULSIVE  
DEORBITATION MODULES**

**DEVELOPMENT  
OF CHEMICAL PROPELLANTS**

**DEVELOPMENT  
OF OPTOELECTRONIC  
AND MECHATRONIC TOOLS**

**DEVELOPMENT OF  
AVIONIC ROCKETS SYSTEMS**



# UNMANNED TECHNOLOGIES

We conduct R&D activities in the field of unmanned technologies for user-defined applications. Teams of engineers create advanced UAV software based on machine vision. Our engineering experience covers planning and implementing test flights and integrating avionics systems, both on a domestic and global market. We design precision mechanics and electronics dedicated to UAV.

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**DEVELOPMENT  
OF UAV CONTROL SYSTEMS  
AND UAV DESIGN**

**DEVELOPMENT OF MACHINE  
VISION AND REAL-TIME  
SOFTWARE**

**ELECTRONIC AND MECHANICAL  
SYSTEMS FOR UAV**

**DEVELOPMENT  
OF ANTI-DRONE SYSTEMS**

**INTEGRATION WITH UTM/ATM  
SYSTEMS**

**INTEGRATION OF ON-BOARD  
AVIONICS SYSTEMS**





# MATERIAL TECHNOLOGIES

We implement the latest technologies in strength testing of materials and sub-assemblies of aircraft engines as well as other structures operating under heavy mechanical loads at a broad range of temperatures. We are one of the global leaders in strength testing.

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## MECHANICAL TESTS

STATIC, FATIGUE  
AND DYNAMIC TESTS

STRUCTURAL COMPONENT  
TESTS

IMPACT TESTS

## VIBROACOUSTICS TESTS

NON DESTRUCTIVE  
TESTING

STRESS MEASUREMENTS  
WITH DIFFRACTION METHODS

DESIGN AND TESTS  
OF LANDING GEAR, WHEEL  
AND BRAKE SYSTEMS



# COMPOSITE TECHNOLOGIES

We provide technological solutions and implement comprehensive research programs in the field of high-strength composite materials. We have a certified composite testing laboratory and advanced equipment for the production of composite structures.

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QUALIFICATION TESTS  
FOR COMPOSITE MATERIALS

THERMOPLASTIC COMPOSITE  
TECHNOLOGIES

COMPOSITE PARTS  
MANUFACTURING TECHNOLOGIES

COMPOSITE STRUCTURES  
DESIGN

STRESS ANALYSIS

NON DESTRUCTIVE TESTING





# R&D FOR INDUSTRY

Our teams design aircraft engine components, aircraft construction elements, co-create avionic on-board systems. We are creators of trends in building software and control systems for the needs of the aviation market. At the Institute, we develop production, repair and maintenance technologies for designed elements. Our people design industrial heavy duty and aeroderivative power gas turbines, electric motors and power generators as well as equipment for the oil and gas industry. We are also present in the area of renewable energy.

**STRUCTURAL, DURABILITY  
AND RELIABILITY ANALYSIS**

**FLOW AND HEAT TRANSFER  
ANALYSIS**

**DEVELOPMENT OF NEW  
PRODUCTION TECHNOLOGIES**

**AUTOMATION AND PRODUCTION  
PROCESSES OPTIMIZATION**

**DESIGN OF EMBEDDED SYSTEMS**

**MECHANICAL COMPONENT  
TESTS**

**MEASUREMENT  
OF ELECTRICAL PARAMETERS**

**DIGITAL AVIONIC  
PROTOCOL TESTS**

**3D PRINTING  
TECHNOLOGY DEVELOPMENT**

**PRESSURE TESTS**

# TRUSTED BY MAJOR COMPANIES

PRATT & WHITNEY

DLR - GERMAN AEROSPACE CENTER

LEONARDO

NLR - ROYAL NETHERLANDS  
AEROSPACE CENTRE

GENERAL ELECTRIC

CIRA - ITALIAN AEROSPACE  
RESEARCH CENTER

HONEYWELL

THALES ALENIA SPACE

AIRBUS

ARIANEGROUP

BAKER HUGHES

ONERA - FRENCH AEROSPACE LAB

INNIO

CNES - CENTRE NATIONAL  
D'ÉTUDES SPATIALES

WABTEC CORPORATION

OHB SYSTEM AG

NAMMO





# COOPERATION WITH INDUSTRY

## **PUBLIC-INDUSTRIAL PARTNERSHIP**

SINCE 2000, WE HAVE BEEN  
DEVELOPING COOPERATION  
WITH THE WORLD LEADER  
IN THE ENGINEERING INDUSTRY

WE HAVE LAUNCHED ONE  
OF THE LARGEST ENGINEERING  
CENTERS IN EUROPE

WE DEVELOP JOBS  
FOR TEAMS OF ENGINEERS  
WITH A BROAD COMPETENCE  
SPECTRUM

## **CORPORATE CUSTOMERS**

WE PROVIDE ENGINEERING  
SERVICES IN THE FIELD OF  
ANALYSIS AND DESIGN,  
AS WELL AS RESEARCH  
AND DEVELOPMENT WORKS  
FOR CORPORATE CLIENTS  
BASED ON LONG-TERM  
COOPERATION AGREEMENTS

WE PROVIDE SERVICES  
AS PART OF AN ENGINEERING  
CENTER CREATED ESPECIALLY  
FOR THIS PURPOSE



# CERTIFICATES AND QUALITY SYSTEMS



## PN-EN ISO/ IEC 17025:2018-02

- AB 129 AERODYNAMIC LABORATORY
- AB 1490 COMPOSITES TESTING LABORATORY
- AB 792 NON DESTRUCTIVE TESTING LABORATORY
- AB 792 MATERIALS TEST LABORATORY
- AB 792 STRUCTURAL TEST LABORATORY
- AB 131 LANDING GEAR LABORATORY
- AB 132 ENVIRONMENTAL LABORATORY
- AB 1489 MATERIALS TECHNOLOGY LABORATORY
- AB 1491 TEST LABORATORY



## ISO 9001:2015 AND AQAP 2110:2016

- SCIENTIFIC RESEARCH AND LABORATORY TESTS
- DEVELOPMENT WORKS
- DESIGN AND PRODUCTION
- IN AEROSPACE AND RELATED FIELDS



## INTERNAL CONTROL SYSTEM

- EXPORT, IMPORT AND INTRA-COMMUNITY TRANSFER
- OF GOODS OF STRATEGIC IMPORTANCE
- TECHNICAL SUPPORT
- AND BROKERING SERVICES



## AS9100D CERTIFICATE

- AVIONICS AND DIGITAL
- SYSTEMS LABORATORY

**ISO 9001:2015**  
**ENGINEERING DESIGN CENTER**



**NADCAP**  
**COMPOSITE TESTING LABORATORY**



**PART-21, PART-145 CERTIFICATES**  
**PRODUCTION AND MAINTENANCE ORGANIZATIONS**



**ADDA AP-270**  
**DESIGN ORGANIZATION**



**ACE QUALITY SYSTEM – SILVER LEVEL**  
**MATERIALS AND STRUCTURES RESEARCH CENTER**



**S-400 CERTIFICATE**  
**MATERIALS TEST LABORATORY**





# OUR PROJECTS

We are involved in European and national R&D programmes in the field of aviation, space, remote sensing, material and composite technologies.

27

INTERNAL  
PROJECTS

40

PROJECT  
GRANTS



**25**

**PROJECT  
LEADER**



**13**

**PROJECT  
GRANTS FOR  
INDUSTRY**

Status as of July 2021

# AVIATION TECHNOLOGIES

STRUCTURES / MATERIAL TECHNOLOGIES  
UAV / TRANSPORT SYSTEMS

EU PROJECTS VALUE: EUR 7,75 MLN  
PL PROJECTS VALUE: PLN 6,53 MLN

**2**  
**DOMESTIC**

ISSLOT, M2PD

**11**  
**INTERNAL**

I-31P (2), JAY, PRC-650,  
NOISE, TRWAKOM,  
CUSTO-PROBE,  
SUDIL-2, CEDDUP,  
MAŁY BEZZAŁOGOWY  
PŁATOWIEC HYBRYDOWY,  
HYDRA

**10**  
**EUROPEAN**

DREAM, LATTE, HIGHTRIP,  
TRAIL, SAT-AM, IMOTHEP,  
COAST, WINGPLUSE,  
X-TEAM D2D, CHRZAŚCZ



Status as of July 2021



**11**  
**EUROPEAN**

TLPD, SPRODEM, GRACE II,  
MDT40, DSVD, DLVD, GITES,  
HITOPAS, TVC, 20 NGBT,  
CAT 1N

**6**  
**DOMESTIC**

POLON, THCOAT, PIAST,  
FITOEXPORT, SPOPS,  
HIPERGOL

**5**  
**INTERNAL**

SSR, SRB-2020,  
ASP MAP, PCYMS,  
BURSZTYN

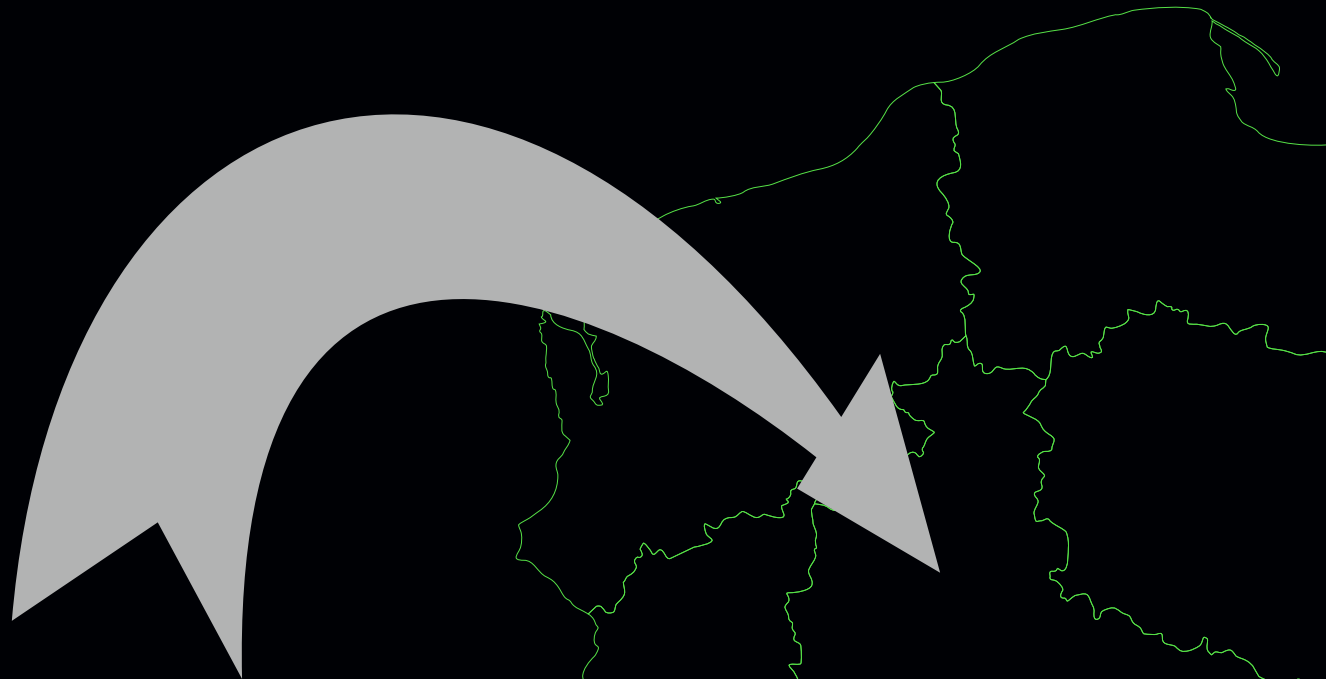
# SPACE TECHNOLOGIES

ROCKET TECHNOLOGIES / SPACECRAFT PROPULSION  
DEORBITATION MODULES / PROPELLANTS

ESA PROJECTS VALUE: **EUR 4,82 MLN**  
PL PROJECTS VALUE: **EUR 32,07 MLN**

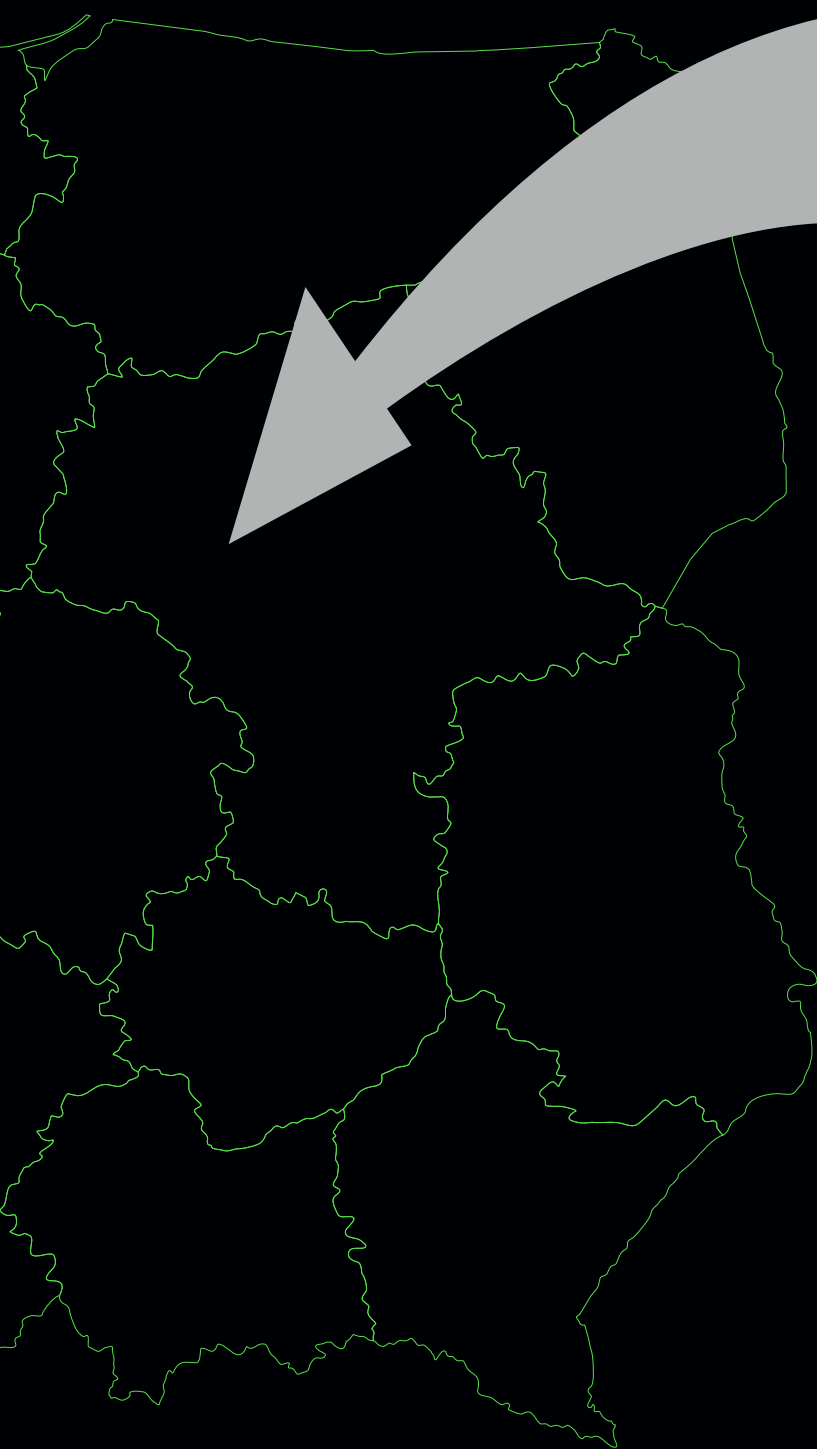
Status as of July 2021

# DOMESTIC COOPERATION



- AVIA – SPLOT AVIATION AGREEMENT
- AERONET – AVIATION VALLEY
- BIELSKO FEDERATION OF AVIATION COMPANIES
- POLISH CLUSTERS
- POLISH CHAMBER OF COMMERCE FOR HIGH TECHNOLOGY
- POLISH AVIATION TECHNOLOGY PLATFORM
- POLISH SPACE TECHNOLOGY PLATFORM
- POLISH SCIENTIFIC SOCIETY OF COMBUSTION ENGINES
- ASSOCIATION OF POLISH AVIATION INDUSTRY
- SILESIA AVIATION CLUSTER
- ASSOCIATION OF DEFENSE AND AVIATION INDUSTRY EMPLOYERS
- POLISH SPACE INDUSTRY ASSOCIATION





- ŁUKASIEWICZ RESEARCH NETWORK
- POLISH ARMAMENTS GROUP
- PZL MIELEC
- WARSAW UNIVERSITY OF TECHNOLOGY
- MILITARY UNIVERSITY OF TECHNOLOGY
- RZESZOW UNIVERSITY OF TECHNOLOGY
- ASTRONIKA
- POLISH SPACE AGENCY
- CREOTECH INSTRUMENTS
- CIVIL AVIATION AUTHORITY
- AIR FORCE INSTITUTE OF TECHNOLOGY

# INTERNATIONAL COOPERATION

We are member of global research and technical organizations. Within their structures, we undertake actions aimed at strengthening the position of the Polish research sector.



- ACARE – ADVISORY COUNCIL FOR AERONAUTICS RESEARCH IN EUROPE
- AHS – AMERICAN HELICOPTER SOCIETY
- AIAA – AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS
- ASD – AEROSPACE AND DEFENSE INDUSTRIES ASSOCIATION OF EUROPE
- CEAS – COUNCIL OF EUROPEAN AEROSPACE SOCIETIES
- EASN – EUROPEAN AERONAUTICS SCIENCE NETWORK
- EREA – EUROPEAN RESEARCH ESTABLISHMENTS IN AERONAUTICS
- IAA – INTERNATIONAL ACADEMY OF ASTRONAUTICS
- ICAS – INTERNATIONAL COUNCIL OF THE AERONAUTICAL SCIENCES
- IFAR – INTERNATIONAL FORUM ON AERONAUTICAL RESEARCH
- STAI – SUPERSONIC TUNNEL ASSOCIATION
- ICAF – INTERNATIONAL COMMITTEE ON AERONAUTICAL FATIGUE







# ENGINE RESEARCH

## COOPERATION WITH THE OHIO STATE UNIVERSITY

“Distortion-tolerant Fan Capable of Ingesting Boundary Layer (BLI-Fan)” research project

## ROTATING DETONATION ENGINE (RDE) TESTS FINANCED BY US AIR FORCE LABORATORY

As a result of the agreement with Air Force Office of Scientific Research, a rocket engine research test stand and a detonation combustion chamber was built





# UTM TESTS IN NEVADA

We are the only foreign institution invited to participate in American tests of the unmanned traffic management system in the urban area, which took place in Reno, Nevada, USA. The project coordinator was NASA's Ames Research Center in cooperation with the Nevada Institute of Autonomous Systems (NIAS) and Federal Aviation Administration (FAA). Academic and scientific institutions as well as significant global companies operating on the drone market took part in the tests.





# AWARDS AND DISTINCTIONS

- FORBES „30 UNDER 30” EUROPE (2020) – distinction for Adam Okniński, Ph.D. participating, together with the team, in the development of a major spacecraft propulsion center in Europe
- INTARG (2019) – Unmanned Aerial System designed for acquiring multispectral data about the area
  - MAIN EXHIBITION PRIZE – GRAND PRIX FOR THE BEST INVENTION OF INTARG 2019
  - STATUETTE OF THE MINISTER OF AGRICULTURE AND RURAL DEVELOPMENT
  - PLATINUM MEDAL FROM THE MINISTER OF INVESTMENT AND DEVELOPMENT
  - INNOVATION LEADER 2019 IN THE TECHNOLOGY CATEGORY
- INTARG (2018) – ILR-33 AMBER rocket, QUERCUS.2 multispectral platform
- NI ENGINEERING IMPACT AWARD (2017) – rocket engine testing software
- BRUSSELS INNOVA (2015, 2016) – gold medal for compact digital radar altimeter with integrated antenna and Individual Autonomous Navigation System
- CLEAN SKY FORUM (2015) – STARLET project





# SCIENTIFIC CONFERENCES

## POLISH-AMERICAN CONFERENCE ON SCIENCE AND TECHNOLOGY

The event serves to extend cooperation between Polish and American partners in the field of innovation.

## FATIGUE OF AIRCRAFT STRUCTURES

Conference topics cover all issues related to material fatigue and aircraft structures.

## EUROPEAN FORUM FOR MARKETING OF SCIENTIFIC AND RESEARCH ORGANIZATIONS

The Forum is an opportunity to present the latest achievements in the field of promoting science and innovation.

## DEVELOPMENT TRENDS IN SPACE PROPULSION SYSTEMS

The main goal of the event is the promotion of space research and the motivation to solve problems in this field.

## ROTORCRAFT FORUM

Scientific conference and meeting of people interested in rotorcraft.

## SAFETY AND CERTIFICATION OF COMPOSITE STRUCTURES

Seminars and workshops for: national civil aviation office inspectors, Industry representatives and academics.



# PUBLISHING HOUSES

## PUBLISHING HOUSES

Our publishing houses have been operating since 1927. We edit and publish articles and books prepared by Polish and foreign scientists

## SCIENTIFIC LIBRARY

We have one of the best-stocked aviation libraries in Poland with collection of 80 000 volumes and about 5 500 microfilms of scientific papers and publications

## SCIENTIFIC QUARTERLY

Our scientific quarterly '*Transactions on Aerospace Research*' is one of the longest-published journals in Poland devoted to aviation and space (1951).

## PUBLISHING SERIES

HISTORICAL LIBRARY OF THE INSTITUTE OF AVIATION  
SCIENTIFIC LIBRARY OF THE INSTITUTE OF AVIATION  
FATIGUE OF AIRCRAFT STRUCTURES  
MARKETING OF SCIENTIFIC AND RESEARCH ORGANIZATIONS  
JOURNAL OF POLISH-AMERICAN SCIENCE AND TECHNOLOGY

## EDUCATION

The aviation class is an educational program coordinated jointly with the Primary School No. 87 with Integration Departments in Warsaw.



## VOLUNTEERING

We are actively involved in pro-educational, pro-health and pro-social activities.

## DIVERSITY

We are signatories to the Diversity Charter. We are committed to taking action to support and promote diversity.



## INTEGRATION

We help senior pilots and engineers. We support aviation initiatives. We are also open to local activities.

# OUR CSR

We are involved in socio-educational and pro-health initiatives. Our experts are happy to share their knowledge with the youngest aviation enthusiasts as well as engineering students. We strengthen our position by joining initiatives relevant to the aviation industry. Cooperation through the exchange of experience is the motto we want to follow in our daily activities.





# NIGHT AT THE INSITUTE OF AVIATION

## 10 EDITIONS

THE NIGHT AT THE INSTITUTE OF AVIATION IS THE LARGEST EDUCATIONAL NOCTURNAL EVENT IN POLAND. ITS PURPOSE IS TO POMOTE THE AEROSPACE SECTOR AND ENGINEERING PROFESSIONS.

THE LAST EDITION GATHERED OVER 51 000 VISITORS.

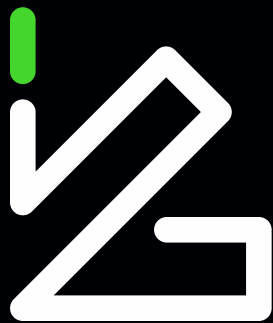
THE TOTAL ATTENDANCE AT THE PREVIOUS TEN EDITIONS OF THE EVENT GATHERED 300 000 VISITORS.



# CONTACT

**ŁUKASIEWICZ RESEARCH NETWORK - INSTITUTE OF AVIATION**  
AL. KRAKOWSKA 110/114, 02-256 WARSAW, POLAND  
E-MAIL: [ILOT@ILOT.LUKASIEWICZ.GOV.PL](mailto:ILOT@ILOT.LUKASIEWICZ.GOV.PL)  
+48 22 846 00 11 | [WWW.ILOT.LUKASIEWICZ.GOV.PL](http://WWW.ILOT.LUKASIEWICZ.GOV.PL)





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